N.S.W. DEPARTMENT OF AGRICULTURE.

BIOLOGICAL BRANCH - DIVISION OF SCIENCE SERVICES.

P L A N T D I S E A S E S U R V E Y

for the

TWELVE MONTHS ENDING 30th JUNE, 1953.

TWENTY-THIRD ANNUAL REPORT.

Notes compiled by officers of the Plant Pathological Section of the Biological Branch, New South Wales Department of Agriculture, Sydney, Australia.

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COMMONWEALTH MYCOLOGICAL INSTITUTE
21 OCT 1954

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N.S.W. DEPARTMENT OF AGRICULTURE

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C O N T E N T S.

	PAGE.
CEREALS AND GRASSES	
Wheat	1 - 2
Oats	3
Barley	3
Maize	3 - 4
Sweet Corn	4
Sugar Cane	4 - 5
Miscellaneous Grasses	5 - 6
FIELD AND FODDER CROPS (Alphabetically by common name)	6 - 8
FRUIT	
Cane Fruits	8
Citrus Fruits	9 - 12
Pome Fruits	12 - 13
Stone Fruits	13 - 16
Tropical Fruits	16 - 17
Miscellaneous Fruits	17 - 19
ORNAMENTALS (Alphabetically by common name)	19 - 23
VEGETABLES (Alphabetically by common name)	23 - 33
MISCELLANEOUS PLANTS (Alphabetically by common name)	33 - 35
NEW PLANT DISEASES	35 - 38

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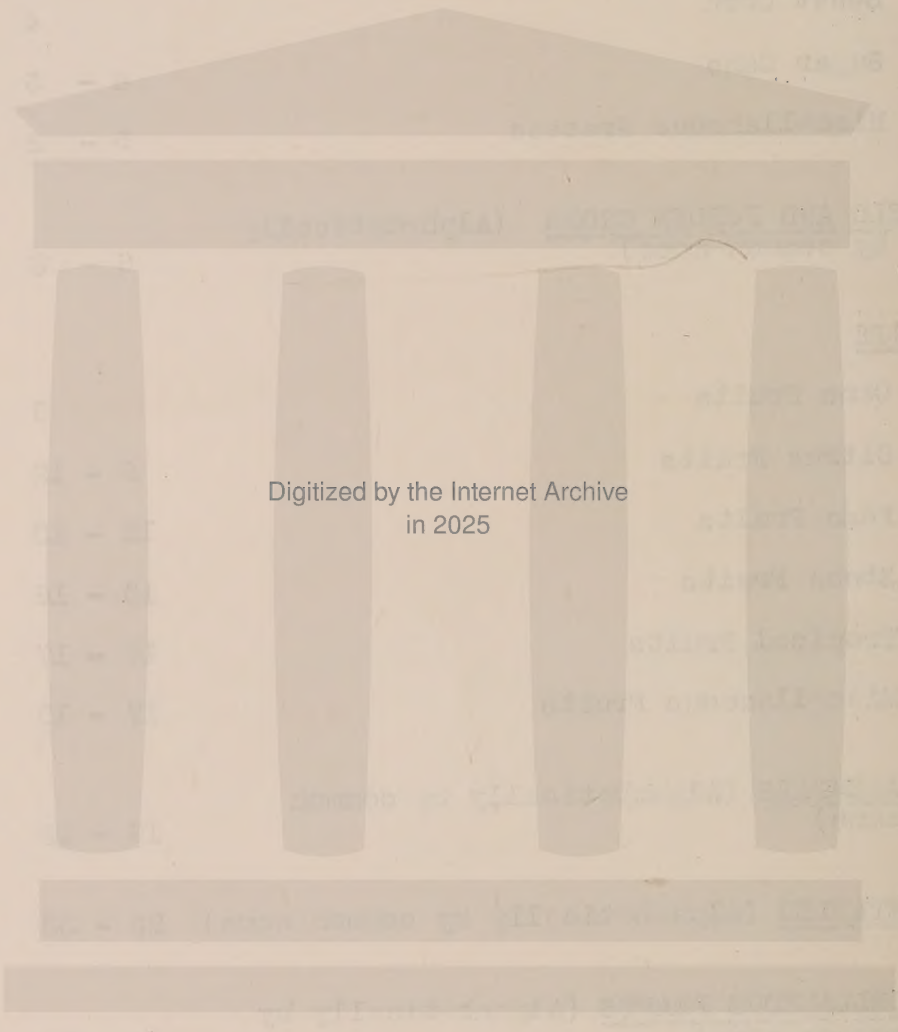

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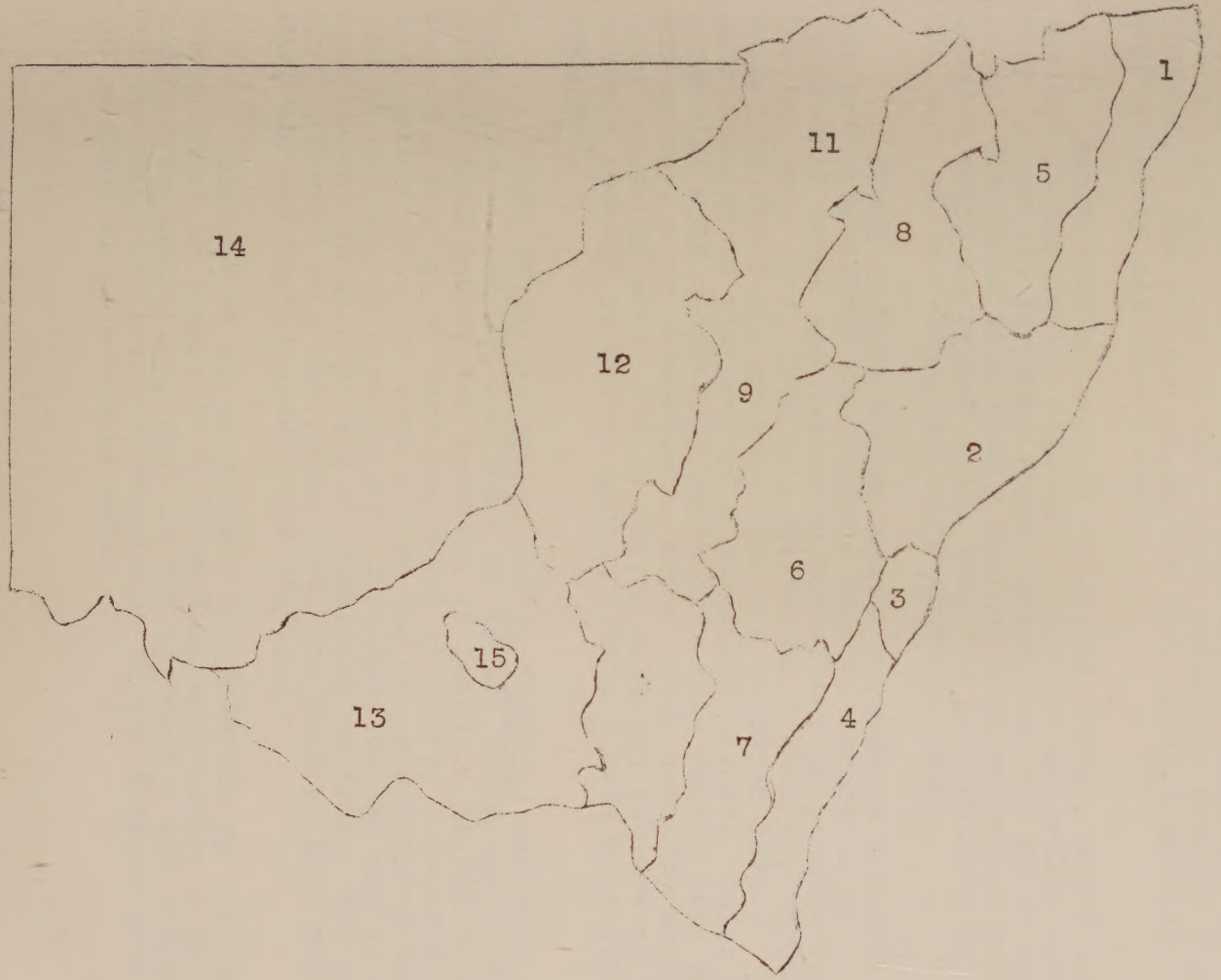

DISTRICTS OF NEW SOUTH WALES.

KEY.

1. North Coast (N.C.)
2. Central Coast (C.C.)
3. Metropolitan Area (M.A.)
4. South Coast (S.C.)
5. Northern Tableland (N.T.)
6. Central Tableland (C.T.)
7. Southern Tableland (S.T.)
8. North Western Slope (N.W.S.)
9. Central Western Slope (C.W.S.)
10. South Western Slope (S.W.S.)
11. North Western Plain (N.W.P.)
12. Central Western Plain (C.W. .
13. Riverina (R.)
14. Western Division (W.D.)
15. Murrumbidgee Irrigation Areas (M.I.A.)

DEPARTMENT OF AGRICULTURE

NEW SOUTH WALES

BIOLOGICAL BRANCH - DIVISION OF SCIENCE SERVICES

PLANT DISEASE SURVEY - 1952/3

TWENTY-THIRD ANNUAL REPORT.

CEREALS.

WHEAT

The 1952/3 wheat harvest in New South Wales yielded 56,000,000 bushels from 2,660,000 acres, which is the lowest acreage sown in this State since the drought year 1919/20. The average yield per acre of 21.1 bushels represents an all-time record.

Apart from an exceptionally wet autumn, which delayed sowings in the South, seasonal conditions generally were very favourable for crop growth throughout the wheat belt. In all districts mild spring weather with opportune rains enabled crops to finish well; this was particularly so in the case of late-sown, backward southern crops.

FROST INJURY, though common throughout the State, was not responsible for serious losses, except in an occasional crop, and estimated reductions in yield varied, for the most part, from a trace to 5%. Even so, the damage caused by frost was greater than the combined losses attributable to diseases of a parasitic nature. Under the generally mild conditions which prevailed during late spring and summer, many stem-frosted crops which normally would have hayed-off were able to finish well and because of the virtual absence of severe spring frosts little head frosting occurred.

BUNT (*Tilletia caries* and *T. foetida*) was more prevalent than last season and the increase in the incidence of this disease is a matter for concern. A total of 40,000 bushels was rejected because of bunt infection at thirty receiving centres throughout the State this season and it is estimated that an additional 60,000 bushels were infected, though not in sufficient amount to be detected at receiving centres. The areas most affected were the South-West, the Central West and the Curlewis and Manilla districts (N.W.S.)

Since bunt is so readily controllable by various seed dusts there is reason to believe that many contract grading and dusting operators, who, in the aggregate, are responsible for treating the greater proportion of the State's seed wheat, are not dusting at an adequate rate.

STEM RUST (Puccinia graminis tritici) was observed in the North West in trace amounts only and the damage caused was negligible. The failure of stem rust to develop in this rust-liable area of the State during the late spring is attributed to a succession of cold nights in which the temperatures were consistently below normal. The majority of crops in the Central West and South West showed no evidence of infection.

LEAF RUST (Puccinia triticina), though commonly observed in the North West, did not develop to any extent and was responsible for negligible losses only. Very little evidence of the disease was noted in the Central West and South West.

FLAG SMUT (Urocystis tritici). With the exception of one crop of Waratah at Wagga (S.W.S.) and another of Gabo at Inverell (N.T.), observed infections were generally light although the total number of infected crops was higher than last season. The increased incidence of flag smut is associated with the popularity of the susceptible variety, Gabo, which, for the past five seasons, has occupied some 12-14% of the total wheat acreage.

LEAF SPOT OR WINTER BLIGHT (Septoria tritici) was common in most districts but did not develop to any serious extent. Even in the South where this disease is usually troublesome, infection was very light.

GLUME BLOTCH (Septoria nodorum) occurred to a minor degree in isolated crops in the North West.

TAKE-ALL (Ophiobolus graminis) occurred in all major divisions of the wheat belt but no severe losses were reported. The disease was most troublesome in crops on land previously sown to lucerne or clovers.

FOOT-ROT (Helminthosporium sativum and Curvularia ramosa) was recorded from many districts but only minor losses were involved. It appeared to be most prevalent in late sown crops in the Orange (C.T.) district, and on old lucerne and clover land.

ROOT ROT (Fusarium culmorum) was reported from Barham (R), Wagga (S.W.S.), Graman (N.T.) and Inverell (N.T.), but in the instances was the crop seriously affected.

LEAF SPOT (Helminthosporium tritici-repentis) caused restricted damage but only to seedling plants in some crops in the Dubbo (C.W.S.) district. It was also reported from Gunnedah (N.W.S.). Head infection, resulting in the condition known as PINK GRAIN, was common in the North West but no seriously affected samples of grain were reported.

POWDERY MILDEW (Erysiphe graminis tritici) was noticeable in the early spring in some North Western districts but disappeared as the season advanced.

WEATHER DAMAGE. With the exception of losses from hail, which were estimated at 680,000 bushels, weather damage was light.

OATS.

The estimated acreage sown to oats in New South Wales in 1952/53 was 1,158,000 acres, of which 747,000 acres were harvested for grain. The total yield of 15,000,000 bushels is a record for the State.

FROST INJURY occurred in all districts but its effects were not severe and losses were much lighter than usual.

STEM RUST (Puccinia graminis avenae) was observed generally and was most pronounced in early maturing varieties. In the aggregate, however, it was responsible for minor losses only.

CROWN RUST (Puccinia coronata) was reported from most districts in trace amounts. Occasional crops in coastal districts showed moderate infection, although even in this crown rust liable area infections generally were lighter than for some years past.

SMUT (Ustilago avenae and U. kolleri) was commonly observed but usually only in trace amounts. Two exceptions were a crop of Algerian at Inverell (N.T.) and a crop of Fulghum at Cowra (C.T.), each of which showed 10-15% infection.

PHOSPHORUS DEFICIENCY was reported from Cowra (C.T.) and Coolac (S.W.S.).

GREY SPECK (Manganese deficiency) was recorded for the first time in cultivated oats in a crop of Algerian grown for green manure purposes at Eastwood (M.A.). This soil had received excessive lime. Subsequently an unconfirmed report of suspected manganese deficiency in oats growing in calcareous soils at Yanco (M.I.A.) was received.

DOWNY MILDEW (Sclerospora macrospora) was observed in the late spring affecting occasional plants in a crop subjected to flood conditions during the late winter at Richmond (M.A.).

BARLEY.

SCALD (Rhyncosporium secalis) occurred extensively without causing any serious losses.

FROST INJURY was reported to be severe in the Dartbrook (C.C.) district. No other reports of extensive frost damage were received.

COVERED SMUT (Ustilago hordei) was reported in trace amount from Dartbrook (C.C.) and Wagga Wagga (S.W.S.).

MAIZE.

RUST (Puccinia sorghi) was more prevalent than usual during 1952/53, particularly on the Coast and Northern Tableland. At Glen Innes (N.T.) a number of inbred lines were reported to have been completely defoliated by the disease, which was also reported to be unusually severe on the Dorrigo (N.C.). In most specimens examined urodosori were

parasitized by Darluca filum.

LEAF BLIGHT (Helminthosporium turcicum) was severe on the far South Coast where it was responsible for an estimated 15% loss in early maturing hybrids. Elsewhere on the coast it was common but of little economic importance. Little infection was observed in inland areas.

ROOT AND BASAL STALK ROT (Gibberella moniliformis, G. saubinetii and G. fujikuroi var subglutinans) occurred to a slight extent on the coast but was rarely observed in inland districts. COB AND GRAIN ROT conditions attributable to the Gibberella complex were also unimportant. Slight primary infection developed in some coastal crops and a small amount of secondary infection was reported following earworm damage at Grafton (N.C.).

DRY ROT (Diplodia zeae) was reported in trace amount from a few coastal districts. In general it was not as common in either the root and basal stalk rot or the cob rot phases as was the Gibberella complex.

HEAD SMUT (Sorosporium reilianum). High infection was observed in a crop at Wauchope (C.C.) but no other reports of this disease were received.

MOLYBDENUM DEFICIENCY. Stunted growth associated with necrosis of leaf edges and tips which occurred in a number of maize crops in the Taree (N.C.) district was found to be associated with molybdenum deficiency. Affected crops responded well to the application of molybdenum fertilizers.

SWEET CORN.

As in previous seasons, diseases in sweet corn were of little importance.

RUST (Puccinia sorghi) occurred commonly in coastal districts but no cases of severe infection were reported and losses were negligible.

ROOT AND BASAL STALK ROT (Gibberella moniliformis, G. saubinetii and G. fujikuroi var subglutinans) was reported only from the Windsor-Richmond area (M.A.) where light infections occurred.

COB AND GRAIN ROTS (Gibberella spp. and other fungi) were reported in trace amount following ear-worm damage to cobs in an occasional crop in the Metropolitan Area.

SUGAR CANE.

Information supplied by the Colonial Sugar Refining Co. Ltd., shows that 125,714 tons of sugar cane were crushed in New South Wales during the 1952/53 season.

It is estimated that 89 tons, representing 0.07% of the total tonnage crushed, were lost through disease.

MOSAIC (virus) which was responsible for an estimated loss of 68 tons, supplanted FIJI DISEASE as the most important disease.

FIJI DISEASE (virus) was less troublesome than usual and it was estimated that only 21 tons were lost through this disease.

PINEAPPLE DISEASE (Ceratostomella paradoxa) affected "germination" of cane cuttings after planting in some districts but over-all losses were small.

Other diseases, including CHLOROTIC STREAK (virus), RED ROT (Physalospora tucumanensis), EYESPOT (Helminthosporium sacchari) and LEAF SCALD (Bacterium albilineans) were recorded in trace amount only.

MISCELLANEOUS GRASSES.

BARNYARD GRASS (Echinochloa crus-galli).

GALL SMUT (Ustilago crus-galli). Specimens bearing unusually large galls were collected at Cowra (C.W.S.)

BENT GRASS (Agrostis tenuis).

BROWN PATCH (Rhizoctonia solani, Helminthosporium spp., Curvularia sp.) was recorded as usual in lawns and sports greens throughout the State.

DOLLAR SPOT (Sclerotinia homeocarpa) was recorded in the Metropolitan Area.

DAMPING OFF (undetermined) occurred in seedling stands. The plants yellow and die off in patches but it has not yet been shown that any organism is responsible.

LEAF FLECK (Mastigosporium rubricosum) was recorded for the first time in N.S.W. from Mt. Wilson (C.T.)

COCKSFOOT (Dactylis glomerata).

LEAF FLECK (Mastigosporium rubricosum) was identified for the first time in N.S.W. on specimens from Mt. Wilson (C.T.) The disease has been present for many years and causes quite severe leaf damage in the cooler months.

COUCH GRASS (Cynodon dactylon).

BROWN PATCH (Rhizoctonia solani, Curvularia spp., Helminthosporium spp.) occurred widely as usual.

SLIME MOULDS caused occasional instances of smothering in the Metropolitan Area.

MAT GRASS (Homarthria uncinata).

RUST (Puccinia cacao) was recorded from Boga (S.C.) and was heavily parasitised by Darluca filum.

PHALARIS (Phalaris tuberosa).

ERGOT (Claviceps purpurea) was recorded in a seed crop at Holbrook (S.W.S.). There was, however, only a very light infection.

PRAIRIE GRASS (Bromus unioloides).

LEAF SPOT (Helminthosporium sativum) was recorded from Richmond (C.C.).

WATER COUCH (Paspalum distichum).

ERGOT (Claviceps paspali) was recorded from the Central Coast.

FIELD AND FODDER CROPS.

RED CLOVER (Trifolium pratense).

ANTHRACNOSE (Colletotrichum trifolii) was recorded for the first time in N.S.W. from the Singleton district (C.C.) and subsequently from Camden (C.C.) and Murwillumbah (N.C.). At all three centres the disease developed following a period of wet weather, accompanied by high day temperatures and humidities, in December and January and resulted in the virtually complete destruction of a number of well established, vigorously growing stands.

A feature of the disease, as observed this season, is that, in every instance, clover stands coming into their second year of growth were most seriously affected. In this connection it is interesting to note that red clover has long been regarded in N.S.W. as a non-permanent pasture species which tends to decline during the second year of growth and rarely produces a satisfactory third year stand. There is some justification, therefore, for suggesting that anthracnose, although not previously recorded, has been present for some years and that, to a degree, it has contributed annually to red clover decline in N.S.W., without ever before developing on an extensive scale.

LEAF SPOT (Pseudopeziza trifolii). A light infection was recorded from Bega (S.C.)

LEAF AND STEM BLIGHT (Stemphylium botryosum and Phoma sp.) A severe blighting of a stand at Glentherne (C.C.) was associated with the attack of these two fungi.

SOOTY BLOTCH (Cymadothea trifolii) was recorded for the first time in N.S.W. from Guyra (N.T.) where the infection was light to moderate.

SUBTERRANEAN CLOVER (Trifolium subterraneum).

RUST (Uromyces trifolii subterranei) is undoubtedly the most serious disease of subterranean clover in N.S.W. Severe infections occur in tablelands and coastal districts annually which considerably reduce the value of the stands, the past year being no exception.

DAMPING OFF (Pythium ultimum) was recorded during the winter from Cootamundra (S.W.S.).

CROWN ROT (Rhizoctonia solani) was recorded in a seedling stand at Finley (S.W.S.) and it is thought that the abnormally warm weather in the late autumn may have favoured this pathogen.

MOSAIC (Virus) was recorded from Tenterfield (N.T.)

YELLOWING AND STUNTING was recorded from various districts and appeared to be associated with poor or ineffective nodulation.

MAGNESIUM DEFICIENCY was recorded from Morisset (C.C.) and its occurrence is suspected in other localities.

WHITE CLOVER (Trifolium repens)

RUST (Uromyces trifolii trifolii-repentis), which, in its accidial stage was so severe last spring, was recorded causing trace infections only.

LINSEED.

PASMO (Sphaerella linorum) was recorded as usual in the north west but, as last year, caused little damage.

CLUB HEAD (Zinc deficiency) was not reported. It probably occurred in the north west but no doubt the more favourable moisture level of the soil enabled most crops to extract sufficient zinc for their requirements.

FROST INJURY was recorded on seedlings in the Tamworth district (N.W.S.) and at Moree (N.W.P.) causing severe injury.

MEDICS.

LEAF SPOT (Pseudopeziza medicaginis), MOSAIC (Virus) and BLACK STEM (Ascochyta imperfecta) were recorded on the central coast on Medicago denticulata.

LUCERNE.

STEM NEMATODE (Ditylenchus dipsaci) was recorded on one-third of the farms visited during a survey of the disease in the Hunter Valley (C.C.). Several stands had been so thinned as to make them unprofitable. The affected stands were usually two or more years old, though no correlation between age of stand and severity of the disease was observed. Plants of red clover, white clover and burr medic growing in severely affected stands appeared quite normal and no nematodes were found when specimens were examined in the laboratory.

DOWNY MILDEW (Peronospora trifoliorum) occurred widely in the spring in coastal areas and in the Murrumbidgee Irrigation Areas where there were instances of heavy infections in crops which had been left too long before being cut or the growth of which had been checked for some reason. A heavily infected crop was observed at Dorrigo (N.C.) in the late autumn.

ROOT ROT (Fusarium sp. associated) was recorded from Inverell (N.W.S.) where considerable areas were dying on waterlogged soils. Numerous other instances of root and crown rots, with which Rhizoctonia solani and Fusarium spp. were associated, were recorded from various parts of the State but in most cases, only a few plants were affected. A stand at Wootton (C.C.) died out in mild moist weather in May following renovation.

LEAF SPOT (Pseudopeziza medicaginis) was, as usual, ubiquitous. Significant damage, however, as in the case of downy mildew, only occurred when crops were left too long before being cut or when the growth of the stands had been checked for some reason.

YELLOWING (?Virus) was recorded in trace amounts from all parts of the State. The affected plants usually make almost as good growth as the unaffected.

ROOT KNOT (Heterodera marioni) was reported to be causing severe wilting in a stand at Hanwood (M.I.A.) which was growing on an area previously used for vegetables.

LUPIN (Lupinus angustifolius)

WILT (Botrytis cinerea) was responsible for considerable damage in crops at Pennant Hills (M.A.) and Mt. Wilson (C.T.). The plants were attacked at or a few inches above ground level.

WILT (Pythium sp.) was recorded in a crop in the Hills district (M.A.) after 12-15 inches of rain in 10 days during early May.

BLIGHT (Pleiochaeta setosa) was noted at Mt.Wilson (C.T.)

SOYBEAN.

BACTERIAL PUSTULE (Xanthomonas phaseoli var. sojense) was observed in a crop at Glen Innes (N.T.).

TOBACCO.

BLANK SHANK (Phytophthora parasitica), which was recorded for the first time last year, was not observed, although research may have revealed its presence.

ROOT KNOT (Heterodera marioni) was very severe in the Tenterfield District (N.T.).

CANE FRUITS.

BOYSENBERRY.

ANTHRACNOSE (Elsinoe veneta). Unusually severe cane infection occurred during early autumn in commercial crops in the Bathurst district (C.T.). Warm autumn weather following rain provided optimum conditions for the development of the disease.

CITRUS FRUITS.

PHYTOPHTHORA ROOT, COLLAR & FRUIT ROT (Phytophthora citrophthora). Losses of trees from collar and root rot continued in the Windsor, Kurrajong and Wiseman's Ferry district (M.A.) as the aftermath of 1949-51 floods. Renewed flooding along the Hawkesbury River and in parts of the Central Coast in June, 1952 and heavy rain in May 1953 resulted in increased activity of Phytophthora root diseases in the subsequent months. In the Windsor and Penrith Areas (M.A.) extensive replanting has been in progress, using trees on Poncirus trifoliata stock. A few heavy individual losses of yearling trees occurred during winter, following rains in May, as a result of collar rot above the bud union, due to carelessly deep planting. In the Central Coast Area many trees adversely affected in the previous years have improved considerably, though in lowland orchards the recovery has been less marked.

In the Murrumbidgee Irrigation Areas a succession of moist winters has accentuated loss of trees on rough lemon rootstock. Some complete blocks of trees have been removed, but in many other cases growers are replacing individual trees with citrus on "trifoliata" stock.

Of citrus trees planted on the Murrumbidgee Irrigation Areas last season 95% were on the resistant "trifoliata" stock.

In the Narromine district collar and root rot caused some losses during late winter 1952.

In the Hawkesbury River area losses of fruit following June 1952 floods was estimated at between 50,000 and 60,000 bushels (42,000 of Valencia). Brown rot occurred in the lowland orchards in the Central Coast area during winter 1952 particularly in the partly flooded blocks.

Brown rot was also reported as quite serious in some Gosford (C.C.) orchards on unsprayed Washington Navel orchards following autumn rains in 1953. Severe fruit fall was observed in a number of orchards as the fruit was maturing in early April. This was due to a sudden loss of fibrous roots in Phytophthora infested soil that had been waterlogged by heavy rain.

BLACK SPOT (Guignardia citricarpa). At Gosford (C.C.) black spot caused only slight losses during December, mainly in unsprayed orchards. Because of light crops many growers failed to complete spraying programmes, but despite this, the disease did not develop seriously because of mild spring and summer weather. On summer ripening lemons black spot was observed in several blocks of Eureka lemons of low vigour at Somersby (C.C.). It was considered that root rot had adversely affected tree condition, rendering the fruit more liable to develop the disease.

In the Hills district (M.A.) black spot was for the most part slight and good control was achieved where sprays were applied. Some instances of heavy development were reported from the Hills district on late hanging Valencias during summer 1953. Some infection of second crop Valencias also showed up in Hills district orchards in March, 1953.

MELANOSE (Diaporthe citri). Infection of fruit, leaves and twigs of late Valencias and Washington Navel oranges as well as Eureka lemon was quite heavy in a number of orchards in lowland areas of Ourimbah, Lisarow and Niagara Park (C.C.) and

in older orchards in the Hawkesbury River area (M.A.). In the Hills and Kurrajong districts (M.A.) for the most part only light infection was recorded on main crop fruit. Heavy infection occurred of intermediate crops setting in late autumn, and of autumn foliage growth.

STEM END ROT (Diaporthe citri). This condition appears to be more serious in late Valencias than in Washington Navel oranges. Survey indicates that certain orchards are more liable to produce affected fruit than others. Tree condition appears to be an important factor.

SCAB (Sphaceloma fawcettii scabiosa) was not important on main crop fruit in coastal orchards. Some mild infections occurred at Gosford (C.C.) on intermediate crop fruit maturing in the summerof 1952. In the Hills district (M.A.) severe infection occurred on intermediate lemons setting as a result of scattered bloom over a long period in late summer and autumn.

SEPTORIA (Septoria depressa) was found on very few blocks on the Murrumbidgee Irrigation Areas during the 1952 season. This is attributed mainly to the general adoption of early spraying, particularly of Washington and Thompson Navel oranges. First affected fruit were seen in mid July.

BROWN SPOT (Suspected bacterial disease) was again responsible for medium to heavy losses of Emperor mandarins in the Lower Portland and Windsor areas, (M.A.) and considerable damage to autumn growth made during humid weather also occurred. Fruit infection occurred for the most part in May.

At the Gosford Citrus Research Station, Narara (C.C.) young autumn growth of the tangelo varieties Minneola, Orlando, Wekiwa, Seminole, Thornton & Sampson, and also Thorny grapefruit and rough lemon were affected. The Minneola in particular was so badly blighted that all the autumn growth died off. The Umatilla tangor, Kara and Wilking Mandarins and Silverhill satsuma appeared to be resistant.

ARMILLARIA ROOT ROT (Armillaria mellea). The disease continues to be one of the main causes of unthriftiness and death in the Mangrove Mountain and Somersby areas (C.C.) and at Maroota (M.A.). A considerable increase in infection was reported in sandy soils of Windsor & Wiseman's Ferry orchards (M.A.).

GREEN AND BLUE MOULDS (Penicillium digitatum and P. italicium). Only minor losses were reported in packed fruit from the Gosford district (C.C.).

SCLEROTINIA BLIGHT (Sclerotinia sclerotiorum). Some blighting of seedlings in nursery beds was reported during early winter 1953 from Carlingford (M.A.).

SCALY BUTT (Virus). A high incidence of scaly butt in Valencia oranges on Poncirus trifoliata stock was reported from a number of Murray River (V.D.) orchards. The trees had developed symptoms at the unusually early age of 2 years. The trees had been propagated by a Mildura nurseryman, using buds from trees on sweet orange stock.

SHELL BARK (suspected virus). Position unchanged. What appears to be this disease was noted affecting a tree of shaddock at Pitt Town (M.A.). It has not previously been recorded on this citrus variety.

SUDDEN DEATH (undetermined). This disease on Valencia and Washington Navel oranges and grapefruit on Poncirus trifoliata stock is of increasing importance in coastal orchards. Young trees in particular appear to be more liable to succumb although occasionally trees twenty years old are observed to be attacked. The death of the tree is sudden, usually taking place less than a month from the first signs of wilting. There are indications that root infecting organisms may be implicated.

Two cases of sudden death were noted at Griffith (M.I.A.) and one at Curlwaa (W.D.).

FLORIDA GUMMOSIS (suspected virus). A further extension of this disease was reported from the Wentworth district (W.D.), young grapefruit in several orchards being affected. It is now thought that the disease may have been introduced with an importation of Surprise Navel orange trees from Florida in about 1923 by the Division of Horticulture. Trees of this variety propagated from imported budwood were distributed to all major citrus areas. All trees so far located have been found to be affected with the disease, and also to show foliar symptoms of psorosis.

KNOBBY BARK (cause unknown). This disease causes woody gall-like growths covered with normal bark on citrus limbs. The first signs of swelling occur on the year-old twigs and these increase in size with age. In the past year this disease has been reported from the Dee Why district (M.A.) and from the Mangrove Creek district (C.C.) affecting seedling rough lemon trees. In both cases almost every tree in the area was affected. In the past only very few cases of this disease have been seen.

YELLOW LEAF (Magnesium deficiency) has again been very general in coastal citrus orchards and has resulted in poor cropping where permitted to remain uncorrected for several years. It was also reported from a number of localities in the North Western Slopes area on trees growing in alkaline soils. Sprays of magnesium sulphate are being tested for its control in these areas.

In the Murrumbidgee Irrigation Areas, following correction of magnesium deficiency at Stanbridge, apparent improvement in fruit quality has been noted.

EXANTHEMA (Copper deficiency). In the Central Coast the disease was still evident in neglected orchards or where inadequate drainage had been permitted to affect vigour. Generally, symptoms were considerably milder in affected trees than in the past several seasons. Several reports of serious exanthoma were received from the Windsor area (M.A.).

MOTTLE LEAF (Zinc deficiency). Moderately severe mottle leaf was observed on yearling citrus trees in several nurseries in the Gosford area (C.C.), particularly where new soil had not been used to raise the stocks. Mild zinc deficiency symptoms were observed in big bearing trees growing in light sandy soil at Somersby and Mangrove Mountain (C.C.). A single spray of 5-2½-100 zinc sulphate-lime every third or fourth year on trees liable to develop mottle leaf has been shown to be sufficient to maintain trees free from this

condition. Zinc deficiency symptoms have been noticeable on trees in the Windsor, Kurrajong and Pitt Town (M.A.) districts. Prior to the heavy rains of the past 4 years zinc deficiency was rarely seen in coastal citrus. This disorder continues to be an important cause of tree unthriftiness in orchards in the M.I.A., Narromine (N.W.S.) and Murray River (W.D.) areas.

WINTER YELLOWING. Rain and good growing conditions in autumn 1952 resulted in heavy late growth of citrus, particularly of young trees in the 2-5 year group which were not carrying fruit. A State-wide spell of sudden very cold weather at the end of April caused this immature soft growth to become very chlorotic (see previous report), and trees remained in this condition throughout the winter. By spring 1953 numerous reports were received of death of roots of these trees, varying in severity from loss of fibrous roots, to rotting of most of the root system. Investigation revealed that these roots were completely devoid of stored carbohydrates and it is presumed that the yellow leaves were much reduced in efficiency with the result that the whole plant, including the root system was gradually starved during the winter months. These trees recovered slowly during spring and summer 1952.

Trees on sweet orange, rough lemon, trifoliata and in particular Cleopatra mandarin stocks were affected. The condition was reported from coastal, M.I.A. and lower Murray citrus areas.

CREASING (Non parasitic) was much more prevalent than usual on Thompson Navels and present to a certain degree on Washington Navels in the Murrumbidgee Irrigation Areas.

SOIL pH AND CITRUS HEALTH. Concern exists about the acid condition of some older citrus plantings on the Murrumbidgee Irrigation Areas. It is suggested that this is one of the contributory factors to lowered fruit quality and impaired tree vigour. Reduced availability of phosphate is suggested as an associated factor. Already there are some indications of response to the application of lime on one block. Following on preliminary investigations by the Biological Branch and others, the Division of Horticulture has now undertaken this research work as a major project.

POME FRUITS.

The apple crop was light this season because of poor blossoming, but pear yields were normal. The weak blossoming of apples was a direct result of the heavy crop carried the previous season under drought conditions, which were intensified in many instances by severe mite infestation.

APPLE.

BLACK SPOT (*Venturia inaequalis*). Infection was very slight this season and no difficulty was experienced in achieving control despite favourable infection conditions in the spring. Ascospore inoculum was at a very low level. Black spot occurred at the Griffith end of the Murrumbidgee Irrigation Areas for the first time. There was a sharp increase in late secondary infection at Bilpin (C.T.).

LIMB CANKER AND DIEBACK (*Dothiorella* sp.) The limb

canker phase of this dieback complex was much less active than last season. Some new infections occurred but canker development was restricted. There was some extension of old cankers. In practically all orchards within the Metropolitan Area trees which survived infection the previous season were invaded by the wood rotting fungus Schizophyllum commune. Many of these trees are now either dead or valueless.

Beyond the Metropolitan Area the disease was recorded at Oakdale (S.C.) and Medowie (C.C.), and there was a suspected case at Uralla (N.T.).

POWDERY MILDEW (Podosphaera leucotricha). Severe infection occurred on unsprayed trees in the Metropolitan Area and on the Northern Tablelands. Elsewhere infection was light to moderate occurring mostly on Jonathan.

RIPE ROT (Gloeosporium sp.) caused a substantial loss in a few orchards in the Metropolitan Area. The variety involved was Willie Sharp and in all cases the fruit was approaching over-maturity on the trees.

FLECK (Fabraea maculata) occurred in a young non-bearing orchard of unsprayed Gravensteins at Cobbitty (S.C.). Leaf spotting was followed by leaf yellowing and subsequent premature defoliation. Fleck has been rarely observed on apples in N.S.W.

PEAR.

BLACK SPOT (Venturia pyrina). Pear scab was more serious than apple scab this season, and heavy secondary infection occurred, especially on Williams. Pears last season suffered an initial infection not experienced by apples and this no doubt allowed a greater relative carry-over of the pear scab fungus. The organic fungicide thiram is finding a definite place in pear spraying schedules.

STONY PIT (Virus) was recorded in nine orchards at Orange (C.T.) affecting Packham's Triumph, Beurre Bosc and Howell. The percentage of affected fruit per tree varied from a trace to 100%. In the latter cases, which were more common with Packham's Triumph, bark symptoms were evident.

QUINCE.

FLECK (Fabraea maculata) again caused severe premature defoliation. It occurred again at Griffith (M.I.A.), infection being severe where spraying recommendations were not followed.

STONE FRUITS.

Stone fruit yields were reasonably good, with the notable exception of apricots, where the setting was very light because of unfavourable weather for pollination. Brown rot caused substantial losses in some crops, the yield and quality of prunes was reduced by rust and young cherry and apricot plantings were damaged by bacterial canker.

ALMOND.

SHOT HOLE (Clasterosporium carpophilum). Infection

was severe on fruit and leaves wherever control measures were inadequate.

APRICOT.

BACTERIAL CANKER (Pseudomonas syringae). Considerable loss occurred in young plantings throughout the State, this being the third peak of incidence of bacterial canker since annual incidence records of this form of "gummosis" were commenced in 1943. Previous peaks occurred in 1943 and 1948.

BROWN ROT (Sclerotinia fructicola). Some blossom blighting occurred on the Murrumbidgee Irrigation Areas but losses generally were slight.

SHOT HOLE (Clasterosporium carpophilum) was particularly severe on the Murrumbidgee Irrigation Areas and in coastal regions. Infection was heavy in tableland districts and reports of the occurrence of this disease were received from all parts of the State.

FRECKLE (Cladosporium carpophilum). Heavy infection occurred in coastal regions and at East Kurrajong (C.C.). Thiram is giving excellent control and is non-phytotoxic.

RUST (Puccinia pruni-spinosae). Heavy infection with premature defoliation occurred in coastal regions and at East Kurrajong (C.C.).

ROOT ROT (Phytophthora cinnamomi) caused considerable loss of young trees on peach stock in slow draining soil in coastal regions and at East Kurrajong (C.C.) following heavy rains in February. This fungus was suspected as the cause of a root rot which killed several young trees in an orchard at Koraleigh (W.D.).

BLACK HEART (Verticillium dahliae) continues to be a problem on the Murrumbidgee Irrigation Areas. All land which has carried tomatoes appears to be infested with this fungus.

SHOOT BLIGHT AND FRUIT ROT (Sclerotinia sclerotiorum). This rot of green fruits occurs fairly regularly in the East Kurrajong district (C.C.). This year the disease was recorded on the M.I.A., affecting a small percentage of fruit in most apricot blocks. The attack occurred when the fruit was about $\frac{5}{4}$ to 1 inch in diameter.

CHERRY.

BACTERIAL CANKER (Pseudomonas syringae). Heavy losses occurred in young plantings, particularly at Orange (C.T.). Remarks for apricot apply equally to cherry.

BROWN ROT (Sclerotinia fructicola). Losses were common in late maturing varieties in tableland districts. Some blossom blighting occurred in these areas.

CHERRY LEAF SPOT (Coccomyces hiemalis). A State-wide survey failed to detect the presence of this disease and it now appears that the eradication and quarantine measures adopted at the time of the initial outbreak in 1950 have been successful.

NECTARINE.

BROWN ROT (Sclerotinia fructicola) caused no loss of any consequence.

LEAF CURL (Taphrina deformans). Infection was heavy wherever control measures were neglected or imperfectly applied.

RUST (Puccinia pruni-spinosae). Premature defoliation occurred in coastal districts but in tableland areas the disease was of no consequence.

FRECKLE (Cladosporium carpophilum). Severe infection occurred on unsprayed trees in coastal districts. The disease caused no losses in tableland or inland areas.

SHOT HOLE (Clasterosporium carpophilum). Some severe shoot and bud blighting occurred at Orange (C.T.).

PEACH.

BROWN ROT (Sclerotinia fructicola). Some blossom blighting occurred on the Murrumbidgee Irrigation Areas but caused no direct crop loss. Heavy infection occurred in that area on varieties maturing about mid-February but losses were slight in the later maturing varieties. Brown rot was present in most tableland orchards but caused no major losses. In coastal districts moderate losses were sustained in late maturing varieties (mid-January to early February).

RUST (Puccinia pruni-spinosae). Premature defoliation occurred in coastal districts. In some cases early maturing varieties which were defoliated by February produced new growth in April as a result of the extremely mild conditions which applied during the autumn. This new growth was severely attacked by rust. The disease was of no consequence on the Murrumbidgee Irrigation Areas and in tableland districts.

LEAF CURL (Taphrina deformans). In tableland areas infection was heavy wherever control measures were neglected or imperfectly applied. Under the same circumstances in coastal districts and on the M.I.A. infection was less severe.

FRECKLE (Cladosporium carpophilum). In coastal districts infection was very heavy where control measures were neglected.

BACTERIAL CANKER (Pseudomonas syringae), caused heavy damage in two orchards at Orange (C.T.).

SHOT HOLE (Clasterosporium carpophilum). Infection was heavy on leaves in most districts. Severe bud blighting and shoot cankering occurred in several orchards at Orange (C.T.). Some bud blight and fruit infection occurred on canning varieties on the Murrumbidgee Irrigation Areas.

ROOT ROT (Phytophthora cinnamomi). In coastal areas infection occurred following prolonged rains in February. In situations where drainage was impeded many young trees died.

CROWN GALL (Agrobacterium tumefaciens). In the major nurseries in the Metropolitan Area the incidence of crown gall was very low in trees dug for distribution this season.

POWDERY MILDEW (Sphaerotheca pannosa). On the Murrumbidgee Irrigation Areas trace infection was detected in the majority of orchards. However, infection was heavy in three orchards, near each of which was growing a mass of Dorothy Perkins rose. Heavy infection was also recorded at Stuart Town (C.T.) and again h avily mildewed Dorothy Perkins rose was in close proximity.

ZINC DEFICIENCY. Severe zinc deficiency occurred in young trees in a new orchard area at Narrandera (R.). It was also prevalent on the M.I.A.

MANGANESE DEFICIENCY. A severe case of manganese deficiency occurred in an orchard at Eastwood (M.A.). Lime had been applied and the soil pH was 7.9.

PLUM.

BROWN ROT (Sclerotinia fructicola.) Light infection was general but substantial losses occurred at Orange (C.T.) especially in Pond's seedling.

RUST (Puccinia pruni-spinosae). An epiphytotic of rust occurred in prunes at Young (S.W.S.) causing extensive premature defoliation and substantial reduction in yield and quality of fruit. Severe infection of prunes also occurred on the Murrumbidgee Irrigation Areas. Light to moderate infection occurred in plums in coastal and tableland districts.

SHOT HOLE (Clasterosporium carpophilum). Leaf infection was prevalent in coast and tableland orchards.

BACTERIAL SPOT (Xanthomonas pruni). Heavy fruit infection occurred in one orchard at Orange (C.T.) particularly on October Purple and to some extent on President. Of the former variety some 15% of fruit was infected. Trace infection occurred in several other orchards in the Orange district.

ROOT ROT (Phytophthora cinnamomi) was recorded on plum at Narara (C.C.). Mariana stock was much more resistant than Myrobolan and Buck Plum. In recent years it has been frequently observed in the field that trees on plum stock (probably Mariana) survive wet soil conditions much better than trees on peach and apricot stock.

PLUM POCKETS (Taphrina pruni) was recorded from Leura (C.T.). The disease occurs regularly in this Blue Mountains region, and its distribution seems to be largely confined to that area. The first record of plum pockets in N.S.W. was from Leura in 1932.

TROPICAL FRUITS.

BANANA.

BUNCHY TOP (Virus). Records compiled by the Division of Horticulture show a continued fall in the incidence of this disease. 2,427 infected plants were found during the year compared with 3,654 plants in the previous year; 3,831 in 1950/51; 5,385 in 1949/50; 5,565 in 1948/49 and 5,942 in 1947/48. The area planted to bananas in N.S.W. was 26,232 acres.

LEAF SPOT (Cercospora musae). Losses from leaf spot were again heavy in the Tweed and Brunswick districts (N.C.). There was further interest shown by growers in control by spraying and several new installations of spraying equipment and pipe lines were made.

PASSIONFRUIT.

BROWN SPOT (Alternaria passiflorae). Partial defoliation and cane injury were observed in fruiting vines in the Mangrove Mountain (C.C.) district.

WOODINESS (Virus). This disease was again widespread in plantations. Further isolations from infected vines studied in differential hosts again indicated that they were strains of cucumber mosaic virus. An isolate from Duranbah (N.C.) appeared to be less subject to masking by high temperatures than most other isolates and will enable glasshouse studies to be continued into the summer months.

FUSARIUM WILT (Fusarium oxysporum). This disease was recorded for the first time in N.S.W. from Mangrove Mountain and Taree (C.C.). Three plants in a plantation of 1,000 vines were affected at Mangrove Mountain and about 100 in a planting of 500 at Taree. The disease has been known for several years in Southern Queensland.

PINEAPPLE.

TOP ROT and WILT (Phytophthora cinnamomi). An outbreak of this disease occurred in a two years old plantation at Ballina (N.C.).

MISCELLANEOUS FRUITS.

GRAPES.

DOWNY MILDEW (Plasmopara viticola). This disease appeared quite early in coastal vineyards, but was well controlled by spraying aided by dry spring weather. In the Murrumbidgee Irrigation Area an early outbreak caused some losses due to blossom attack. Another outbreak in February caused no substantial damage. In Central West and Murray River (W.D.) vineyards, the disease was slight and readily controlled.

BLACK SPOT (Elsinoe ampelina). In the Murrumbidgee Irrigation Area and some coastal vineyards black spot was prevalent on susceptible varieties in the early part of the season. In the Murray River (W.D.) settlements it was generally less important than in previous years, though some severe infection of canes and bunches was reported on sultanas at Koraleigh and Pomona (W.D.).

POWDERY MILDEW (Uncinula necator) occurred in lower Murray River vineyards (W.D.) but was well controlled for the most part. Late maturing canes in some young vineyards at Boomcalla and Pomona (W.D.) were heavily infected.

BITTER ROT (Melanconium fuligincum) caused losses of the Isabella variety in some home gardens in the North Coast and Metropolitan Areas.

STUNT (Virus disease of Black Shiraz) was reported from an additional vineyard in the Hanwood area (M.I.A.).

DYING VINES (suspected virus) several reports were received of Doradillo vines in the Griffith area (M.I.A.) and of sultanas at Koraleigh and Pomona (W.D.) affected with this disease.

LEAF SCORCH (cause not known) was particularly serious again in the Liverpool (M.A.) district. At Cessnock it was reported in a number of vineyards of Riesling variety on limestone soil where the disorder had not previously been seen. Vigour and cropping were reduced.

A VIRUS DISEASE. A single vine of Montils variety and some hundred vines of Rhine Riesling in several Cessnock vineyards this season showed symptoms of what appears to be a virus disease. Leaves were thick and rather crinkled becoming smaller towards the ends of the canes. Cane growth was restricted and internodes very short. Extensive phloem necrosis occurred in canes and petioles.

DELAYED GROWTH OF SULTANAS. A condition affecting 2-3 year old sultanas was reported from the Pomona and Monak districts of the Lower Murray River (W.D.). The vines had made particularly good late autumn growth, but failed to shoot normally in the spring. Some vines died without making any growth, others produced some short unsatisfactory shoots from canes. In most cases after 6-8 weeks delay new growth occurred from dormant buds in 2-year old wood and the vines recovered. The condition is considered to be the result of an insufficient period of dormancy following very late growth which because of mild weather conditions continued into the early winter.

MULBERRY.

LEAF SPOT (Septogloeum mori). Heavy infection occurred throughout the State.

BACTERIAL BLIGHT (Pseudomonas mori) was of fairly general occurrence but was much less serious than the fungal leaf spot. In many instances both diseases occurred together, particularly in coastal and tableland regions. In inland areas the fungal leaf spot tended to predominate.

OLIVE.

LEAF AND FRUIT SPOT (Cercospora cladosporioides). This disease was recorded for the first time in N.S.W., causing severe fruit damage in two Metropolitan localities. In one of these, one variety only (name not known) in a planting of six different varieties was affected.

STRAWBERRY.

CRINKLE AND YELLOW EDGE (Viruses). Position unchanged.

LEAF DISEASES (Mycosphaerella fragariae, Diplocarpon earliana and Dendrophoma obscurans). Dry spring and summer conditions held these diseases in check, but some extension occurred following autumn rains.

WILT (Rhizoctonia solani) was unimportant during the past year.

WALNUT.

BACTERIAL BLIGHT (Xanthomonas juglandis) occurred throughout the State, the heaviest infections being on the Northern Tablelands.

ORNAMENTALS.

ANTIRRHINUM.

RUST (Puccinia antirrhini). Rust was recorded for the first time in Australia from the Sydney Metropolitan Area during October, 1952. It spread rapidly and within six months was widely distributed in eastern N.S.W. and had been recorded from Victoria. All common snapdragon varieties, both tall and dwarf types, were attacked.

The exact way in which this disease was introduced to Australia is not known. Even though much of the seed coming into Australia from overseas has been found to contain rust spores, no conclusive evidence for seed transmission exists although it is possible that seed borne uredospores could be blown from seed being planted to neighbouring snapdragon plants and in this way start the disease. Using uredospores found in seed samples, however, it has not been found possible to produce the disease.

At present, work is continuing on snapdragon rust, special attention being given to varietal resistance and the determination of the strain or strains of rust present in New South Wales.

AZALEA.

POWDERY MILDEW (Oidium sp.). Reported for the first time in New South Wales on this host, caused considerable defoliation of azaleas at the Botanic Gardens (M.A.) and in Eastern Suburbs gardens (M.A.). Its effects are most noticeable in shaded situations.

BEGONIA REX.

POWDERY MILDEW (Oidium sp.) was recorded for the first time in New South Wales on this host and by autumn was widespread throughout the Metropolitan Area and had been reported from the South Coast. Its effects are severe, leaves become blighted and shrivel and the plant is seriously weakened.

CARNATION.

FROST INJURY to flower buds and soft growth was particularly severe during winter 1953.

WILT (Fusarium dianthi) was prevalent in Metropolitan flower farms.

COLLAR ROT (Rhizoctonia solani), LEAF SPOT (Septoria dianthi), RUST (Uromyces caryophyllinus) and MOSAIC (virus) were present in all crops examined.

BRANCH BLIGHT (Fusarium culmorum) was recorded for the first time on this host in New South Wales, causing moderate damage to crops in a Metropolitan nursery.

CHESTNUT (Castanea sativa).

ARMILLARIA ROOT ROT (Armillaria mellea) was recorded for the first time in N.S.W. on this host, causing the gradual death of trees 25-70 years old at Mt. Wilson (C.T.).

CHESTNUT, HORSE (Aesculus hippocastanum).

LEAF SPOT (Septoria hippocastani). Though not previously recorded in N.S.W. this disease has no doubt been present for many years. In the Mt. Wilson district (C.T.) severe infection was noted in early autumn 1953.

CONVOLVULUS TRICOLOR.

COLLAR ROT (Macrophomina phaseoli) was recorded for the first time on this host in N.S.W. causing losses of plants at the Sydney Botanic Gardens (M.A.).

CYCLAMEN.

LEAF BLIGHT (Phyllosticta cyclaminis) was recorded for the first time in the Metropolitan Area, causing very severe injury to glass house plants.

CHRYSANTHEMUM.

LEAF NEMATODE (Aphelenchoides ritzema-bosi) was of little importance due to the almost universal use of E605 sprays for its control. Warm moist weather conditions during autumn favoured its development in unsprayed plants.

STUNT (virus). Virus infection, (probably a complex) is increasing in importance. There is evidence that some varieties may behave as symptomless carriers.

CYMBIDIUM.

BULB ROT (Sclerotium rolfsii). Heavy losses followed the use in compost preparation of tanbark infested with this fungus in several Metropolitan and Central Coast nurseries.

BULB ROT (Pythium splendens) was also active during warm wet autumn weather in a number of Metropolitan and Central Coast nurseries.

DAHLIA.

STUNT AND SPOTTED WILT (viruses) were again prevalent in nurseries and home gardens. A black streak disease which may be due to a virulent strain of spotted wilt was reported from a Metropolitan nursery. Incidence of infection was low.

POWDERY MILDEW (Oidium sp.) favoured by warm humid autumn conditions was more prevalent than usual in Metropolitan and Central Coast nurseries and home gardens.

CALENDULA.

SPOTTED WILT (virus) caused considerable damage in a Leeton Nursery (M.I.A.).

GLADIOLUS.

YELLOWS (Fusarium orthoceras f. gladioli) was reported from a number of Metropolitan flower farms but probably because of the precautions taken by growers against its spread, the incidence was low in most cases.

BOTRYTIS DISEASES (Botrytis gladiolorum and B. cinera). Considerable damage to foliage and flowers of late season crops was noted in Metropolitan and Central Tableland flower farms. Losses of corms in storage were moderately heavy.

LEAF SPOT (Stemphylium sp.) caused extremely severe leaf injury to mid season unsprayed crops in the Metropolitan area. Evidence of great variation in susceptibility was seen.

SCLEROTINIA DISEASES (Sclerotinia gladioli). Root rot resulting in leaf yellowing and tip burn was recorded in several very early spring crops. This phase of the disease appears to result from early planting in infested soil. Some collar rot was also reported.

HARD ROT (Septoria gladioli). Several cases of very severe infection were reported from Metropolitan and Central Tableland nurseries, where an insufficiently long crop rotation had been practised.

LABURNUM VULGARE.

LEAF SPOT (Pleiochaeta setosa). Very heavy infection resulting in early defoliation and spotting of pods was reported from Central Tableland localities.

LAVENDER.

LEAF SPOT (Septoria lavandulae) was reported for the first time in N.S.W. from Mt. Wilson (C.T.).

LUPIN, RUSSELL (garden hybrid).

CROWN ROT (Rhizoctonia solani) was reported for the first time in N.S.W. on this host from Adelong (S.T.).

DAFFODIL.

BULB ROT (Sclerotium rolfsii) was reported for the first time in N.S.W. on this host from a Metropolitan locality.

OLEANDER.

BACTERIAL GALL (Pseudomonas savastanoi var. nerii). An unusual number of reports of this disease were received from Metropolitan localities. In particular infection of flower buds was heavy.

PELARGONIUM GRAVEOLENS.
(Lemon scented pelargonium).

ROOT ROT (Armillaria mellea) was reported for the first time in N.S.W. on this host from a Metropolitan locality.

PEONY.

ROOT KNOT (Heterodera marioni) was recorded for the first time in N.S.W. on Paeonia albiflora from Mt. Wilson (C.T.).

LEAF SPOTS (Botrytis sp. & Septoria sp.) were noted for the first time in N.S.W. on P. mlokosewitchii at Mt. Wilson (C.T.).

RHODODENDRON.

SEEDLING BLIGHT (Botrytis cinerea) was noted for the first time in N.S.W. at Mt. Wilson (C.T.) on seedlings of R. decorum, infection commencing from the papery testa which usually remain attached to the tip of one of the cotyledons.

ROSE.

ROSE WILT (virus) was more prevalent than for many years and reached near-epiphytotic proportions in Metropolitan nurseries and gardens. Reports also indicate that it occurred in many tableland localities and in the Murrumbidgee Irrigation Area. Only floribunda roses showed complete resistance to infection, although there were well marked variations in susceptibility amongst Pernetiana and hybrid tea roses. Well established plants after the initial shock reaction (leafballing and die-back) produced growth of reduced vigour with pinched, hard yellowish foliage. Surveys of old plantings showed that many bushes, which had previously been of low vigour and had suffered from die-back, were showing rose-wilt symptoms. The spring of 1952 was unusually cool, and it is thought likely that the severe symptoms of rose wilt may be best manifested under cool conditions. It now seems probable that the virus is more widespread in New South Wales than previously suspected and is responsible for much of the die-back previously referred to other causes, but that its typical symptoms are masked under normal spring weather conditions.

BLACK SPOT (Diplocarpon rosae) was of slight importance during the spring because of dry conditions, but considerable infection occurred during autumn in coastal and tableland districts.

MILDEW (Sphaerotheca pannosa) was rather general throughout the season.

LEAF SPOT (Monochaetia compta) was noted for the first time in N.S.W. on Rosa gallica at Mt. Wilson (C.T.).

SHASTA DAISY (Chrysanthemum maximum).

WILT (Verticillium dahliae) was recorded from several Metropolitan flower farms, causing heavy losses.

SOLOMON'S SEAL (Polygonatum sp.).

LEAFSPOT (Septoria sp.) was recorded for the first time in N.S.W. causing severe infection of plants at Mt. Wilson (C.T.).

SPANISH BROOM (Spartium junceum).

ROOT ROT (Phytophthora cinnamomi) was recorded for the first time on this host from a Metropolitan garden.

SORBUS AUCUPARIA.

SEEDLING BLIGHT (Botrytis cinerea) was recorded for the first time in N.S.W. on this host causing a seedling blight at Mt. Wilson (C.T.).

STOCK.

BLACK ROT (Xanthomonas incanae) caused heavy losses in some early planted Metropolitan crops.

MOSAIC (virus) was unusually prevalent in Metropolitan crops and was also reported from the Murrumbidgee Irrigation Area.

VEGETABLES.

BEAN.

The bean seed certification scheme was continued for the 10th successive season and fifty-nine crops on 196 acres were passed for certification. The total yield of certified seed was 2,735 bushels, of which 1,111 bushels (40.5%) were Brown Beauty. The yields of the other varieties certified were Hawkesbury Wonder (693 bushels), Tweed Wonder (440 bushels) Wellington Wonder (295 bushels), Goward's Special (109 bushels) and Windsor Longpod (87 bushels). Of the sixty-one crops rejected, fifty-two were rejected on the presence of anthracnose, three on the presence of halo blight and six for other reasons. This compares with a total rejection of six crops in the 1951-1952 season. The main reason for the much greater number of rejections this season was that seasonal conditions were especially favourable for the development of anthracnose.

ANTHRACNOSE (Colletotrichum lindemuthianum). Anthracnose was more severe in several areas during this year than it has been for several years. On the South Coast, it was the major cause of crop rejections in the bean certification scheme. Moist weather conditions considerably assisted its development and spread. Last year, when weather conditions were hot and dry, only three cases of anthracnose were detected. It is possible, however, that some trace infections

which were not detected during crop inspections in the dry year did occur, resulting in a trace carry-over of the disease in the seed. When this seed was planted under moist conditions, severe development of anthracnose could occur. It may also be possible that other methods of disease carry-over are responsible for such destructive outbreaks.

During the year, the testing of lines of Brown Beauty for resistance to Strain -1 (the American beta) of the fungus has continued. Lines found to be resistant in glasshouse tests stood up very well under the epidemic anthracnose conditions on the South Coast this year and it should be possible, after some further selection and testing, to obtain a line of Brown Beauty 100% resistant to strain - 1.

Various other varieties such as Hawkesbury Wonder, Richmond Wonder and Windsor Longpod are also being surveyed for any possible anthracnose resistance this year. Selections of disease-free Hawkesbury Wonder plants from a heavily diseased crop have been made and their disease reaction will be tested in glasshouse inoculation tests. It is also intended to supplement this selection work by breeding for anthracnose resistance, resistance to both of the strains known in N.S.W. being considered.

Anthracnose, as well as being severe in the field in all coastal areas, has also been reported as a transport disease in several consignments of beans arriving at the Sydney Municipal Markets. Under the humid conditions prevailing in the beans, and assisted by secondary fungi and bacteria, a severe pod rot is caused and in many cases has been responsible for the rejection of the consignment.

HALO BLIGHT (Pseudomonas phaseolicola). Several cases of halo blight were recorded during the year. On the South Coast, the disease was not widespread in spite of the moist conditions, only three cases being seen. Several early spring crops in the Gosford area (C.C.) were seen to be quite heavily infected, Tweed Wonder and Wellington Wonder being the two main varieties attacked. The disease was also seen as a transport rot in one consignment of beans arriving at the Sydney Markets from a local grower. One record of the disease on Landreth Stringless beans being grown for canning purposes was also received from Cowra (C.W.S.).

RUST (Uromyces phaseoli typica). Rust was again widespread on both dwarf and climbing varieties except Westralia in most areas of the State. Several reports were received from places on the North and Central Coast and several places in the Metropolitan Area. From Batlow (S.T.) severe rust was reported in crops of Blue Lake climbing beans being grown for canning purposes. On the South Coast, most crops inspected under the certification scheme showed some trace of rust.

FUSARIUM ROOT AND STEM ROTS AND WILTS (Fusarium spp.) Root and stem rot typical of that caused by species of Fusarium was reported from many localities in the State during the past year, most damage being caused during the summer months. On the South Coast, the disease was especially severe in parts of crops that had been flooded and on above-ground symptoms was easily confused with the crinkling and stunting produced by common bean mosaic virus.

Other common diseases that were fairly widespread during the year are angular leaf spot (Isariopsis griseola), bacterial brown spot (Pseudomonas syringae), and the virus disease common bean mosaic. At Batlow (S.T.), Blue Lake

climbing beans were severely attacked during the autumn by a species of Ascochyta (probably Ascochyta boltshauseri) which caused heavy leaf spotting and damage to vines and pods. No records of the bacterial disease American common blight (Xanthomonas phaseoli) were received during the year.

BEET AND SILVER BEET.

BEET EELWORM (Heterodera schachtii). An outbreak of this disease was recorded on a crop of beetroot at Milperra (M.A.) during the year. This represents the second record of beet eelworm disease in this State, the previous record having been made at Mascot (M.A.) in 1941.

The outbreak at Milperra occurred in a ¼ acre crop of Early Wonder beet. The loss in the particular planting was 40-50%; a number of individual patches of affected plants up to 6 ft. in diameter being present. The eelworm had probably been present in the soil on the property for some time previously as the grower stated that traces of the disease had been present in a crop of beetroot on the same ground two years previously but losses had been so small that they had not been brought to notice.

Other crops and weeds reported as susceptible to attack by the beet eelworm were examined on the property with negative results. A subsequent survey of the Milperra and Panania areas indicated that the outbreak was confined to the one property.

LEAF SPOT (Cercospora beticola). This disease was, as usual, prevalent in commercial plantings and home gardens during the season. Many records were made in the Sydney Metropolitan Area, where infection on both beet and silver beet was mostly light. One report of a heavy infection on a crop of silver beet was received from Gosford (C.C.).

DAMPING OFF AND ROOT ROT (Rhizoctonia solani). A number of instances of attack by R. solani were noted on autumn crops of beet and silver beet at Milperra and Panania (M.A.). In beetroot crops, about 1-2% losses occurred in most crops inspected, due to wilting and death of the plants following a necrosis of the lower tap root. A cankering of the enlarged section of the tap root and of that part of the leaf mid vein nearest the crown, with which R. solani was associated, was also present on some of the wilted plants. The causal nature of this association has not, however, been proven, although cankering of the main root does resemble the early stages of "dry rot canker" of sugar beet, attributed by overseas workers to attack by R. solani.

A number of cases of post emergence damping off of beetroot and silver beet, mostly resulting in negligible losses in individual plantings were also observed in this area. In one ¼ acre crop of silver beet at Milperra about 30% seedling loss, due to post emergence damping off, was noted.

ROOT KNOT (Heterodera marioni). There were many records of root knot of beet and silver beet in the Sydney Metropolitan Area, particularly where the crops were grown on sandy soils. No cases of heavy losses were recorded.

CRUCIFERS.

BLACK ROT (Xanthomonas campestris) was recorded in cabbage, cauliflower and broccoli crops from several localities during the year. Generally, infection was light but during the autumn some heavy infections were noted in cabbage crops near Sydney. In several cases, the vascular system of the main stem was almost completely black and rotting of the head due to invasion by secondary organisms was well advanced.

PHYTOPHTHORA ROOT ROT (Phytophthora megasperma). This disease was recorded for the first time on cauliflower in New South Wales in the Windsor area (M.A.) in May. Infection was widespread throughout the area, occurring principally in low lying parts of the crops where water had lain for some time following the flood rains experienced in late autumn. In those sections of the crops up to 100% loss occurred. Some slight losses also occurred on the parts of the crops on higher ground. Plants of varying ages were affected.

It is obvious that the causal organism is widespread in the soils in the Windsor area. Infection was incited by a combination of unseasonably warm conditions in late autumn and the waterlogging of the soil for a considerable period rendering an improvement of soil aeration by scuffling impossible.

CLUB ROOT (Plasmodiophora brassicae). This disease occurred sporadically in crops of cabbage and cauliflower in the Metropolitan Area, particularly in autumn crops in the Windsor-Pitt Town District. Individual infections were confined to single plants or groups of plants in the crops at Windsor and Pitt Town. Liming the soil had little effect on the incidence of the disease. In a number of cases also, the infection in the field was reported to have resulted from the planting out of infected seedlings.

MOLYBDENUM DEFICIENCY. Molybdenum deficiency was recorded in several crucifer crops during the year. On the Bathurst area (C.T.) several cases of whiptail were seen in autumn cauliflower crops and in the same area a condition thought to be molybdenum deficiency was very marked in some brussel-sprout crops. The diseased plants were stunted and distorted and in one crop at Yetholme (C.T.) the yield was considerably reduced and several plants died. Affected plants showed accumulation of nitrate in their leaves and application of molybdenum to these plants in the form of a sodium molybdate solution gave a definite response. This is the first record of molybdenum deficiency on brussel sprouts in N.S.W.

CUCURBITS.

POWDERY MILDEW (Erysiphe cichoracearum) was recorded on Zuica Melon (Lagenaria sp.) for the first time in this State during the year. The record was made at Richmond (M.A.). Rockmelon crops at Forbes (C.W.S.), with the exception of variety P.M.R.45, were moderately damaged during the summer. During the same period, crops of pumpkins and squashes in the Manning River area (C.C.) were also moderately affected. Watermelon crops in that area were only lightly attacked. As usual many other records of powdery mildew on various cucurbits were made during the year.

FUSARIUM FOOTROT. (Fusarium solani f. cucurbitae). Following flooding in the early spring of 1952 in the Richmond-

Windsor area (M.A.), two outbreaks of Fusarium footrot were recorded in pumpkin crops. In one area, three acres of pumpkins were a total loss. In another crop, 5 rows out of 100 showed 60% Fusarium foot rot infection. The area of ground on which the infection occurred had been below flood level. There was about 1% footrot in the remainder of the crop. It appeared that the soil had become infected with the causal organism due to the dumping of rotted cucurbit fruit which had been brought down by the floodwaters. There was no evidence in this case to indicate a seed borne infection.

1% infection was recorded in a crop of Queensland Blue pumpkins at Forbes (C.W.S.).

A survey was made during the late summer of cucurbit seed crops in the Manning River area (C.C.). Fusarium footrot was recorded in this area in 1946. Although no footrot affected cucurbit crops were observed during the survey, it was demonstrated that the causal organism was present in the soil on one property where greater than 80% footrot occurred in a crop of pumpkins early in 1952. The fungus could not be detected in soil on which a crop of pumpkins were affected with footrot three years ago. The available evidence indicates that footrot occurs sporadically in crops of pumpkin, squash and marrow in the Manning River area and although outbreaks in any one season are restricted, the possibility of footrot infected seed being produced in the area is continuous.

MOLYBDENUM DEFICIENCY. Further responses were obtained during the year, following the application of Molybdenum to cucurbit crops in the Coastal Area of New South Wales.

Responses of watermelons to Molybdenum have been obtained for the first time in this State. Specimens of watermelon vines (Var. Cuban Queen) received from Windsor (M.A.) were showing a severe brownish black necrosis of the leaves particularly around the margins. The interveinal areas of these leaves gave a positive test for oxidising substances when tested with the diphenylamine sulphuric acid reagent. The grower stated that affected plants were scattered throughout the crop and that whiptail of cauliflowers had previously occurred on the same land. Application of ammonium molybdate to the plants corrected the deficiency. Watermelons in the Gosford area (C.C.) were also shown to respond to spray during the year. In the Sydney Metropolitan Area there were a number of records of molybdenum deficiency on pumpkins and squashes.

At Dignams Creek (S.C.) rockmelon showing symptoms of Molybdenum deficiency responded to an application of the chemical. The soil on which the crop was growing was of granitic and phyllitic origin with a pH of 5.0 to 5.2.

At Burrell Creek (C.C.) on a soil of shale origin with a pH of 4.6, molybdenum deficiency was diagnosed as the cause of poor growth of a pumpkin crop. It has been a common experience on the Burrell Creek soils, for cucurbit crops to exhibit restricted growth when compared to those crops on the nearby Manning River flat soils where the pH varies from 5.5 to 7.0.

A marked increase in the growth of pumpkins, rockmelons and cucumbers was reported from Lorne (C.C.) following Molybdenum application. Cucumbers and rockmelons in the Gosford area (C.C.) also showed response to spray applications of Molybdenum.

There is now much evidence to indicate that, on the coastal soils of New South Wales with a pH of 5.5 or less, Molybdenum deficiency can be responsible for the poor growth of cucurbit crops. Accordingly, use of a molybdenum containing fertilizer in cucurbit culture is recommended on coastal soils where whiptail of cauliflower or other evidence of molybdenum deficiency has been noted or where growth of previous cucurbit crops has been restricted in spite of the application of the usual fertilizers.

DOWNY MILDEW (Pseudoperonospora cubensis) was recorded for the first time in this State on Zuica Melon (Lagenaria sp.) at Richmond (M.A.)

ANTHRACNOSE (Colletotrichum lagenarium) was recorded for the first time in this State on Zuica Melon (Lagenaria sp.) at Richmond (M.A.).

EGGPLANT.

BACTERIAL WILT (Bacterium solanacearum) was recorded for the first time in New South Wales on this host at Castle Hill (M.A.). Less than 1% of the plants in the crop were reported to be affected.

ENDIVE.

RUST (Puccinia hieracii). This disease, which was first reported in N.S.W. in 1933, was again seen on an endive obtained from a city greengrocer shop in August, 1952. Infection was quite heavy on the older leaves and this is the first record of the disease for several years.

LEEK.

ROOT KNOT (Heterodera marioni). The first record of root knot on a member of the onion group of vegetables was made from leek plants growing in a market garden, at Caringbah (M.A.). The affected plants were slightly stunted in growth and their roots were showing spindle shaped swellings containing the eelworm. Nearby crucifer seedlings were also heavily root-knotted.

LETTUCE.

SPOTTED WILT (Virus). Infections were general in crops in the Metropolitan Area in the spring when some severe losses were recorded at Castle Hill and Wentworthville. During the late summer and autumn period when spotted wilt is usually severe on lettuce, little infection was noted.

DOWNY MILDEW (Bremia lactucae). Although this disease occurred generally through the season, infection was confined to lower outer leaves. No serious economic losses were sustained.

MOLYBDENUM DEFICIENCY. One record from Fairfield (M.A.). On this locality molybdenum deficiency has previously been recorded on a number of crops.

MUSHROOM.

"DAMPING OFF" and "WILTING". (Fusarium solani associated.) Specimens of cultivated mushrooms submitted by a commercial grower at Cabramatta (M.A.) were showing a stunting of growth, a brownish colour and rubbery texture. The disease resembled that described in England as "damping off" or "wilt" and there attributed to the inhibitory action of Fusarium species which had been introduced with the casing soil. Fusarium solani was isolated from the base of the stalks of affected mushrooms and from the surrounding compost and casing soil.

ONION.

DOWNY MILDEW (Peronospora destructor). During the moist spring of 1952, downy mildew was very prevalent in many areas. In the Murrumbidgee Irrigation Area, it was seen as early as mid-September and, following rains in October, it was quite common in onion crops. In the Sydney area, plants at all stages of growth were seen to be attacked, some being almost fully grown before becoming diseased.

PEA.

MYCOSPHAERELLA BLIGHT (M. pinodes) and ASCOCHYTA DISEASES (A. pisi and A. pinodella). Mycosphaerella blight was recorded a number of times during the year. Although infections were scattered over a number of areas, they were not extensive and there were no reports of serious economic loss. Leaf and pod spot (A. pisi) was prevalent in the Metropolitan Area and Central Coast but did not contribute markedly to yield reduction. Ascochyta footrot (A. pinodella) was recorded only once, at Wyong (C.C.).

BACTERIAL BLIGHT (Pseudomonas pisi). Up to 25% infections were recorded in crops of the Emperor variety on the Central Tablelands and Central Western Slopes. Infection, however, was only slight in other varieties in these areas.

FROST INJURY (Non-parasitic). Some blocks of peas at Stony Point (M.I.A.), although very free of parasitic diseases, failed to set pods because of the development of blind terminals, which was diagnosed as an effect of frost injury. Slight frost damage was also present in pea crops in the Central Tablelands in the spring.

POWDERY MILDEW (Erysiphe polygoni). This disease contributed to a moderate extent to yield reduction in a crop of Greenfeast peas at Stonehenge (N.T.)

PEPPER (Capsicum).

BLOSSOM END ROT (Non-parasitic). A heavy loss occurred in a crop at Liverpool (M.A.). The grower stated that a nearby tomato crop was also affected.

POTATO.

BLACKLEG (Bacterium carotovorum). Blackleg continues to be a major source of loss on the coastal and tableland areas when Sebago and Sequoia and, to a lesser extent, Monak varieties are planted. Sebago appears to be inherently more susceptible to blackleg than other commercial

varieties in New South Wales and, in the case of Sequoia and Monak, the large seed which is supplied to growers necessitates extensive cutting at planting time.

Following heavy rains in the early spring, blackleg was very prevalent in crops in the Hastings, Macleay and Manning River areas (N.C. and C.C.). Moderate flooding had occurred on the Macleay and smaller floods on the other two rivers. 70% of the early Macleay River crops were destroyed mostly by blackleg. On the North and Central Coast one-third of the Sebago crops was affected, crops of Monak, Sequoia and Adina averaged 5-10% blackleg and crops of Factor slightly less. Crops planted after the flooding were practically unaffected.

In spring crops in the Metropolitan Area, the incidence of blackleg was limited, as planting was delayed till after the flood rains in early spring. Infections were practically completely limited to low lying sections of the crops. Most infection was again noted in Sebago and Sequoia crops, nearby crops of Adina and Saranac appearing free of infection.

On the Central Tablelands blackleg outbreaks occurred in January and developed to severe proportions in some areas, particularly in crops of Sequoia which had been planted with cut seed, some infections of 50% and one of 90% being reported. Sequoia crops planted with uncut seed were comparatively little affected. Crops of Monak planted with cut sets were more severely affected with blackleg than any other crops except those of Sequoia planted with cut seed. Crops of other varieties were comparatively lightly affected. Following drier weather in March, the spread of blackleg was reduced but not entirely eliminated. In all, 20% of the crops submitted for certification on the Central Tablelands was rejected for excess blackleg infection.

In both the Crookwell and Batlow areas (S.T.) 14½% of the crops submitted for certification was rejected for excess blackleg. Once again, the bulk of the infection occurred in crops of Sebago and Sequoia.

LEAF ROLL (Virus). Tableland crops which were inspected for certification by officers of the Division of Plant Industry were relatively free of leaf roll. On the Northern Tablelands no crops submitted for certification were rejected for excess leaf roll infection (1% at the second inspection). Rejection of crops for excess leaf roll on the Northern Tablelands in 1951/52 was also nil. 2.2% of the acreage submitted on the Central Tablelands was rejected (9.9% in 1951/52) and 0.7% on the Southern Tablelands (1.5% in 1951/52).

COMMON SCAB (Actinomyces scabies). Common scab reached serious proportions in crops in the Central Tablelands. In several certified crops in that area, scab infection was so severe that in some cases 50% of the crop was rejected and in one case 100%. In the potato scab resistance trail at Spring Hill (C.T.) the susceptible Sebago control was heavily scabbed. High resistance to scab was again shown in this trial by the varieties Ontario, Menominee and Seneca and the seedlings S2669 and S2680.

In yield trials at Crookwell (S.T.) the varieties Adina and Ashworth were very heavily scabbed. Many other individual records of scab were received from coastal and tableland areas during the year.

PURPLE TOP WILT (Tomato big bud virus). In contrast to the previous year there was only a slight incidence of purple top wilt in potatoes. In spring crops in the Richmond-Windsor area (M.A.) where up to 60% purple top wilt infection occurred in the spring of 1951, no purple top wilt was observed in commercial crops in 1952. In the early spring of 1952 very wet conditions prevailed in this area whereas the corresponding period in 1951 had been dry. No reports of purple top wilt were received from Wollington and Dubbo (C.W.S.), again in contrast to the previous year.

Very slight infections were recorded in Central and Southern Tableland crops but no crops were rejected from certification because of heavy purple top wilt infection.

A trial conducted at Hawkesbury Agricultural College in the Spring of 1952, in which certified seed was compared with seed obtained from purple top wilt affected plants, did not show that tuber transmission of the big bud virus was responsible for outbreaks of purple top wilt in the field. This result, in the light of observations made during the 1951/52 outbreaks, and in view of the present knowledge of the ecology of the big bud vector (Orosius argentatus Evans) indicates that the outbreaks of purple top wilt in the crops in the 1951/52 season were the result of migration into those crops of viruliferous adults of O. argentatus.

It was further demonstrated in the trial at Hawkesbury Agricultural College that the planting of seed from purple top wilt affected plants exerted a depressing effect on emergence and lowered the yielding potential of the resultant plants. Tubers harvested from purple top wilt affected plants gave a lower emergence and the resultant plants yielded less, the earlier in the growing period at which infection became evident in the parent plants. In order to limit the amount of weak seed which would be included in certified seed lots, a wide tolerance 5% at either inspection, has been set down for purple top wilt in the potato seed certification scheme.

RHIZOCTONIA DISEASE (Rhizoctonia solani). Trace infections of Rhizoctonia were reported from tableland crops, occasioning very little economic loss. Light infections were noted in crops at Richmond and Windsor (M.A.) but there were no other records.

LATE BLIGHT (Phytophthora infestans) contributed little to yield reduction during the year, slight losses being reported from the Central Tablelands and in the Metropolitan Area.

FUSARIUM WILT (Fusarium oxysporum f. tuberosi). There were a few reports of this disease in the tableland crops but no severe losses. Where a system of rotation is followed in these areas, potatoes being planted on the same ground only once every five years at least, the incidence of Fusarium wilt is negligible.

RHUBARB.

DOWNY MILDEW (Peronospora jaapiana). A heavy infection of this disease was recorded from a crop at Caringbah (M.A.) during the spring. Other records of this disease were also made in the Metropolitan Area when seasonal conditions were favourable for its development.

RUST (Puccinia rhoi-undulati). A heavy infection was recorded at Chatswood (M.A.) during the year.

SWEET POTATO.

MOLYBDENUM DEFICIENCY. A terminal chlorosis and scalding of older leaves of sweet potato plants in the Gosford (C.C.) area was found to be associated with molybdenum deficiency. Response to the field application of molybdenum was remarkable and could be seen within four days.

TOMATO.

SPOTTED WILT (Tomato spotted wilt virus). The early seasonal incidence of spotted wilt of tomato followed the delayed pattern recorded last season. The first report was received from Wentworthville (M.A.) on 18th November where one plant in a crop of 2000 was observed to be infected. Incidence varied considerably in different districts. An outbreak which destroyed an entire crop of 3000 plants in November at Somersby (C.C.), and was later followed by heavy losses in other crops in the immediate vicinity, was very much more serious than any other occurrence recorded. The infestation of infective THRIPS TABACI which was responsible for this outbreak is believed to have occurred as the result of migration of the thrips from plants of BIDENS PILOSA which were infected with spotted wilt. At the Hawkesbury Agricultural College, Richmond (M.A.) approximately 20% spotted wilt was noted in a crop of 5000-6000 plants in December. In January a survey of crops in the Prospect, Glenorie and Eastwood districts (M.A.) revealed that less than 1% spotted wilt was present. In the Murrumbidgee Irrigation Areas 1 to 2% infection was reported at the end of January. In March one crop at Milperra (M.A.) exhibited symptoms on a large proportion of the fruit while a similar condition was observed in a crop of 10,000 plants at Carlingford (M.A.). Though no accurate survey figures for discoloured fruit are available, observations made on fruit displayed in greengrocers' windows make it certain that the trouble was widespread and prevalent.

EARLY BLIGHT (Alternaria solani). This annually recurring disease of coastal crops in autumn is held in control only by the universal use of fungicide. Reports of minor damage were received from all coastal areas. One inadequately sprayed crop at Milperra (M.A.) was severely damaged on leaves and stems. Three weeks of cloudy weather accompanied by 9" rain is believed to be responsible for a widespread attack by early blight on trellised early tomatoes in the Coff's Harbour (N.C.) district.

FUSARIUM WILT (Fusarium oxysporum f. lycopersici). Incidence of Fusarium wilt in outdoor crops of the variety Grosse Lisse was much less in the Metropolitan Area this season than for the last few years. In the Murrumbidgee Irrigation Areas soil, virgin to tomatoes, is no longer generally available and infection ranging from 10 to 99% was reported. Efforts are being made to locate an agronomically satisfactory variety of good canning quality to replace the variety Tatura Dwarf Globe which is very susceptible to fusarium wilt. Incidence of this disease in glasshouses in the Mona Vale-Warriewood district (M.A.) ranged from 2 to 15%. Some dissatisfaction has been expressed by growers with results obtained from the use of chloropicrin. This may be due to unsatisfactory methods of application.

BACTERIAL SPOT (Xanthomonas vesicatoria). The only records of serious effects of bacterial spot were received from the North Coast tomato growing areas. In these districts lowest incidence was reported to be at Valla, where all crops are grown on new ground. In other areas crops grown from seed of various origins were attacked. Most serious effects occurred on the variety Rouge de Marmande.

LEAF MOULD (Cladosporium fulvum). Though occasional lesions of leaf mould are encountered in outdoor crops of tomatoes in coastal areas in autumn months, it is unusual for any measurable degree of damage to occur. However, in the Gosford (C.C.) district extremely heavy damage was caused by leaf mould to crops grown by the trellissed method of cultivation in February, March and April, 1953. In May, 1952, some lesions of leaf mould were visible on transplants which had been set out in early April in Glasshouses in the Mona Vale-Warriewood districts (M.A.). Reinspection of the houses at a later date revealed that almost no further development of the disease had taken place and that the incidence of leaf mould in the area was less than has occurred since 1945 at least. Weather conditions are considered to be solely responsible for the comparative absence of disease.

UNIDENTIFIED DISEASE (Virus). A virus disease which has been transferred by grafting but not by mechanical means was prevalent in the Metropolitan Area and Central Coast last year. Diseased plants were slightly shorter than adjacent healthy ones and were characterised chiefly by a yellow discoloration of the growing portions. Upper leaflets were somewhat reduced in size and developed a marginal band of yellow most distinct at the tip but extending to the base in most cases. Margins and tips of leaflets curved downwards and inwards. Fruit-set was not obviously affected though some growers stated that fruit yield was reduced because of smaller fruit size. The disease is not new to this State but in previous years has been of low incidence and has been mistaken for a mild strain of the big bud virus. Present indications are that the disease is possibly caused by the virus of yellow dwarf of tobacco.

Infection rate ranged from 5 to 100% throughout the Metropolitan Area and few crops showing less than 20% were encountered.

MISCELLANEOUS PLANTS.

CROFTON WEED (Ageratum conyzoides).

ROOT ROT (Phytophthora sp.) was recorded for the first time in N.S.W. on this host from an Arcadia orchard (M.A.) after heavy rain.

CROW FOOT (Erodium cygnorum).

LEAF GALL (Synchytrium papillatum). A very heavy infection was recorded at Jerry's Plains (C.C.).

BEAR'S EAR (Cymbonotus lawsonianus).

LEAF SPOT (Entyloma sp.) was reported for the first time on this host from the Oberon District (C.T.).

DIGITALIS (Digitalis lanata).

ANTHRACNOSE (Colletotrichum fuscum) was recorded for the first time in N.S.W. causing severe leaf injury to seedlings in a metropolitan nursery (M.A.).

DOCK (Rumex brownii).

RUST (Puccinia ludwigii) was reported for the first time on this host species in N.S.W. from the Bega district (S.C.).

CAPE GOOSEBERRY WEED (Physalis angulata).

LEAF SPOT (Entyloma sp.) was reported for the first time on this host in N.S.W. causing severe leaf spot of weed in a Terrigal orchard (C.C.).

BLACKBERRY.

GREY MOULD (Botrytis cinerea) was recorded on ripe fruit from the Narooma district (S.C.).

RUST (Kuehneola uredinis) was prevalent in coastal districts.

EUCALYPTUS SP.

LEAF BLIGHT (Sphaerella nubilosa) was recorded from the Metropolitan area.

NIGHT SHADE (Solanum nigrum).

LEAF MOULD (Cercospora tosensis) was prevalent on weeds in the Metropolitan Area.

BRUSH BOX (Tristania conferta).

LEAF SPOT (Cercospora sp.) Heavy infection of young trees was recorded from Dungog (C.C.) and from a number of Metropolitan sources.

NATIVE YAM (Dioscorea transversa).

RUST (Goplana dioscoreae) was recorded for the first time in N.S.W. from Church Point (M.A.)

NATIVE GERANIUM (Geranium pilosum).

DOWNY MILDEW (Peronospora sp.) was recorded for the first time on this host from Dorrigo (N.C.).

NOOGOORA BURR (Xanthium pungens).

POWDERY MILDEW (Oidium sp.) was recorded for the first time in N.S.W. on this host on weeds in a Pitt Town orchard (M.A.).

RED FLOWERED MALLOW (Modiola caroliniana).

LEAF AND STEM RED GALL (Synchytrium modiolensis). Very heavy infection of weeds was noted in the Bega district (S.C.).

PETTY SPURGE (Euphorbia peplus).

LEAF SPOT (Septoria popli) was recorded on weeds in the Metropolitan area.

WATTLE (Acacia spp.)

GALL RUST (Uromycladium tepperianum) was recorded on A. mollissima and A. melanoxylon in the Bega and Moruya districts (S.C.) and on A. implexa in the Kurrajong district (C.C.).

WILD WATERLILY (Nymphoides indicum).

RUST (Aecidium nymphoides) was recorded for the first time in N.S.W. from the Upper Clarence River district (N.C.).

NEW PLANT DISEASES.

During the twelve months ending 30th June, 1953, the following diseases were recorded for the first time in New South Wales:

Acacia implexa (Wattle). - Uromycladium tepperianum (Sacc.) McAlp. (Rust); Kurrajong.

Acacia melanoxylon (Wattle). - Uromycladium tepperianum (Sacc.) McAlp. (Rust); Bega.

Aesculus hippocastanum (Horse chestnut). - Septoria hippocastani B. & Br. (Leaf Spot); Mt. Wilson (present for many years).

Ageratum conyzoides (Crofton weed). - Phytophthora sp. (Root and Crown rot); Arcadia.

Agrostis tenuis (Brown top). - Mastigosporium rubricosum (Dearn. and Barth.) Nannf. (Leaf spot); Mt. Wilson. (Old record).

Allium porrum (Leek).- Heterodera marioni (Cornu) Goodey. (Root knot); Metropolitan area.

Ananas sativus (Pineapple).- Coniothyrium sp. (Leaf spot); Murwillumbah.

Antirrhinum majus (Snapdragon).- Puccinia antirrhini Diet. and Holw. (Rust); Metropolitan area.

Apium graveolens (Celery).- Cercospora apii Fres. (Early blight); Grafton.

Avena sativa (Oats).- Manganese deficiency (Grey speck); Eastwood.

Azalea indica, garden hybrids (Rhododendron indicum)- (Azalea).- Oidium sp. (Powdery mildew); Metropolitan area.

Begonia rex, garden hybrid (Rex begonia).- Oidium sp. (Powdery mildew); Metropolitan area.

Brassica caulorapa (Kohl rabi).- Plasmodiophora brassicae Woron. (Club root); Metropolitan area.

Brassica oleracea var. botrytis (Cauliflower).- Phytophthora megasperma Drosch. (Phytophthora root rot); ~~Sindsor~~ Windsor area.

Brassica pekinensis (Chinese cabbage, var. Imp. Pe-Tsai).- Corcosporella albomaculans Ell. and Ev. (Leaf spot); Metropolitan area.

Bromus molliformis (Soft brome grass). - Erysiphe graminis D.C. (Powdery mildew); Metropolitan area.

Castanea sativa (Chestnut). Armillaria mellea (Vahl. ex Fr.) Quel. (Armillaria root rot); Mt. Wilson (Old record).

Chrysophyllum cainito (Star apple). - Armillaria mellea (Vah. ex. Fr.) Quel. (Armillaria root rot); Metropolitan area.

Convolvulus tricolor.- Macrophomina phaseoli Ashby (Collar rot); Metropolitan area.

Cryptostemma calendulaceum (Cape weed).- Aecidium cryptostemmatis W.L. Waterhouse (Rust); Metropolitan area (1937 record).

Cyclamen persicum (Cyclamen).- Phyllosticta cyclaminis Brun. (Leaf blight); Metropolitan area.

Cymbonotus lawsonianus (Bear's ear).- Entyloma sp. (Leaf spot); Oberon district.

Dactylis glomerata (Cocksfoot).- Mastigosporium rubricosum (Dearn. and Barth.) Nannf. (Leaf spot); Mt. Wilson (old record)

Dianthus caryophyllus (Carnation).- Fusarium culmorum (W.G. Sm.) Sacc. (Branch blight); Metropolitan area.

Digitalis lanata (Digitalis).- Colletotrichum fuscum Laub. (Anthracnose); Metropolitan area.

Dioscorea transversa (Native yam).- Goplana dioscoreae (B. and Br.) G. Cummins (Rust); Church Point.

Erodium cygnorum (Blue crowfoot).- greening (big bud virus); Scone.

Euphorbia peplus (Petty spurge).- Septoria popli D. Shaw (Leaf spot); Metropolitan area (1921).

Geranium pilosum (Native geranium).- Peronospora sp. (Downy mildew); Dorrigo. Greening (big bud virus); Campbelltown.

Homarthria uncinata (Mat grsss).- Puccinia cacao McAlp. (Rust); Boga.

Ischaemum triticeum.- Phyllachora sp. (Leaf spot); Port Macquarie.

Lagenaria sp. (Zuica melon).- Erysiphe cichoraccarum D.C. (Powdery Mildew); Pseudoperonospora cubensis (Berk and Curt.) Rostow;, (Downy mildew); Collctotrichum lagenarium (Pass.) E. et. Halst. (Anthracnose); Richmond.

Lavandula vera (Lavender).- Septoria lavandulae Desm. (Leaf spot); Mt. Wilson.

Lespedeza stipulacea (Korean lespedeza).- Heterodera marioni (Cornu) Goodey (Root knot); Grafton.

Ligustrum vulgare (privet - variegated). - Phyllosticta ligustri Sacc. (Leaf spot); (Woodenbong).

Linum usitatissimum (Linseed). - Pythium sp. (Root rot); Inverell.

Lupinus angustifolius (N.Z. Blue lupin).- Botrytis cinerea Pers. ex. Fr. (Crown rot and wilt); Mt. Wilson.

Lupinus sp. (garden hybrid) (Russell lupin).- Rhizoctonia solani Kuehn. (Crown rot); Adelong.

Modiola caroliniana (Red flowered mallow).- Synchytrium modioliensis Cook (Leaf and stem gall); Bega, Metropolitan area etc. (old record).

Narcissus pseudo-narcissus, garden hybrid (daffodil).- Sclerotium rolfsii Sacc. (Crown rot); Metropolitan area.

Nicotiana tabacum (tobacco).- Phythium sp. (Damping-off of seedlings); Metropolitan area.

Nymphoides indicum (waterlily).- Aecidium nymphoides D.C. (Rust, aecidial stage of Puccinia scirpi D.C.); Upper Clarence River.

Olea europea (olive).- Cercospora cladosporioides Sacc. (Fruit and leaf spot); Metropolitan area.

Paeonia albiflora (Herbaceous peony).- Heterodera marioni (Cornu) Goodey (Root knot); Mt. Wilson.

Paeonia mlokosewitchii.- Botrytis sp., and Septoria sp. (Leaf spots); Ring spot virus. Mt. Wilson.

Passiflora edulis (Passionfruit). Fusarium oxysporum f. (Fusarium wilt); Kulnura; Taree.

Pastinaca sativa (Parsnip).- Phlcospora crescentium (Barth.) Riley (Leaf spot); Richmond.

Polargonium graveolens (Lemon-scented polargonium).- Armillaria mellea (Vahl. ex. Fr.) Quel. (Armillaria root rot); Metropolitan area.

Physalis angulata (Cape gooseberry weed).- Entyloma sp. (Leaf spot); Terrigal.

Polygonatum sp. (Solomon's seal).- Septoria sp. (Leafspot); Mt. Wilson.

Populus nigra (Lombardy poplar).- Armillaria mellea (Vahl. ex Fr.) Quel (Armillaria root rot); Kurrajong.

Pyracantha augustifolia (Narrow leafed fire-thorn).- Gloeosporium fructigonum Berk. (Ripe rot); Metropolitan area.

Pyracantha coccinea (Firethorn).- Heterodera marioni (Cornu) Goodey (Root knot); Metropolitan area.

Rhododendron decorum.- Botrytis cinerea Pers. ex. Fr. (Seeding blight); Mt. Wilson.

Rosa gallica. - Monochaetia compta (Sacc.) Allesch. (Leafspot); Mt. Wilson.

Rumex brownii (Dock).- Puccinia ludwigii Tepp. (Rust); Bega.

Sagina subulata (N.Z. moss lawn).- Rhizoctonia solani Kuehn. (Brown patch); Wagga.

Solanum mauritianum (Potato tree).- Oidium sp. (Powdery mildew); Metropolitan area.

Solanum melogena (Eggplant).- Pseudomonas solanacearum (E.F.S.) Dowson (Bacterial wilt), Castle Hill.

Solanum tuberosum (Potato).- Fusarium trichothecioides Wr. (Powdery dry rot); Orange (1950 record).

Sorbus aucuparia (Rowan).- Botrytis cinerea Pers. ex. Fr. (Seedling blight); Mt. Wilson.

Spartium junceum (Spanish broom).- Phytophthora cinnamomi Rands (Root rot); Metropolitan area.

Statice sinuata (Statice).- Spotted wilt virus; Leeton.

Stipa aristiglumis (Plains grass).- Tolysporium vortifacions D. Shaw (Ropy smut); Piallaway.

Trifolium glomeratum (Ball clover).- Uromyces trifolii (Hedw. f.) Lev. (Rust).

Trifolium pratense (Red clover).- Cymadothea trifolii Wolf (Sooty blotch); Guyra; Colletotrichum trifolii Bain and Essary (Anthracnose); Singleton.

Trifolium repens (White Clover).- Uromyces fleetens Lagerh. (Rust); Metropolitan area.

Trifolium subterrancum (Sub. clover).- Mosaic and stunting virus; Tenterfield.

Tristania conferta (Brush box).- Armillaria mellea (Vahl. ex Fr.) Quel.(Armillaria root rot); Mt. Penang, Gosford.

Triticum vulgare (Wheat).- Pyrenophora tritici-repentis (Died.) Drechs. (Yellow spot); Gunnedah.

Weigela japonica.- Polystictus versicolor Fr. (Wood rot); Metropolitan area.

Xanthium pungens (Noogoora burr).- Oidium sp. (Powdery mildew); Pitt Town.